A coated article comprising:

a temperature-sensitive substrate having a melting point lower than glass;

3

an anti-reflection coating including a plurality of layers substantially transparent to visible

4

light, at least one of said layers being a [DC] reactively sputtered material having a refractive index

5

higher than said substrate and selected from the group consisting of tin oxide, indium oxide, zinc

6

oxide, tin-doped indium oxide, antimony-doped tin oxide, tin-bismuth oxide, and tin-zinc oxide, and

7

at least one other layer having a refractive index lower than said substrate.

1

2. The article of claim 1 wherein said substrate is plastic.

The article of claim 1 wherein said other layer is substantially silicon dioxide. 3.,

The article of claim 3 wherein said [DC] reactively sputtered material is tin oxide. 4.

5. The article of claim 3 wherein said [DC] reactively sputtered material is tin-doped indium oxide.

The article of claim 1 wherein said [DC] reactively sputtered material has a refractive index between 1.9 and 2.2.

1 = 1 = 1 = 1 = 1 = 1 = 1 = 1

The article of claim 1 wherein said plurality of layers includes four layers designated the first second, third, and fourth layers in consecutive numerical order beginning with the layer farthest from the substrate,

5

said first layer having a refractive index lower than said substrate and having an optical thickness δf about one-quarter wavelength at a wavelength between 480 and 560 nanometers,

6 7

said second layer having a refractive index higher than said substrate and having an optical thickness between about one-quarter and one-third of a wavelength at a wavelength between 480 and 560 nanometers,

8 :9

said third laxer having a refractive index lower than said second layer, said fourth layer having a refractive index greater than said third layer,

10

10. An anti-reflection coating for a substrate, comprising:

four layers substantially transparent to visible light and designated the first, second, third, and fourth layers in consecutive numerical order beginning with the layer farthest from the substrate;

said first layer-substantially composed of silicon dioxide having a refractive index lower than said substrate, an optical thickness of about one-quarter wavelength at a wavelength between 480 and 560 nanometers, and a physical thickness of about 92.2 nanometers;

said second layer substantially composed of [DC reactively sputtered] tin oxide having a refractive index higher than said substrate, an optical thickness between about one-quarter and one-third of a wavelength at a wavelength between 480 and 560 nanometers, and a physical thickness of about 78.1 nanometers;

said third layer substantially composed of silicon dioxide having a refractive index lower than said second layer and a physical thickness of about 32.2 nanometers;

said fourth layer substantially composed of [DC reactively sputtered] tin oxide having a refractive index greater than said third layer and a physical thickness of about 18.6 nanometers; and said third and fourth layers having a total optical thickness less than one-quarter wavelength

at a wavelength between 480 and 560 nanometers.

- 1. The article of claim 1 wherein said sputtered material is a DC reactively sputtered material.
- N. The article of claim I wherein said substrate is plastic.
- 13. The article of claim 11 wherein said other layer is substantially silicon dioxide.
- 14. The article of claim 13 wherein said DC reactively sputtered material is tin oxide.
- 1 15. The article of claim 13 wherein said DC reactively sputtered material is tin-doped indium
- 2 <u>oxide.</u>

i,

1

2

3

5

7

8

9

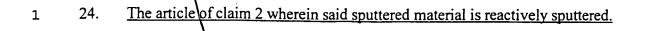
10

11

12

- 1 16. The article of claim 11 wherein said DC reactively sputtered material has a refractive index
- between 1.9 and 2.2.

Jula (14	17.	The article of claim 11 wherein said plurality of layers includes four layers designated the
v √2		first,	second, third, and fourth layers in consecutive numerical order beginning with the layer farthest
4	\$	from	the substrate.
4	Ļ		said first layer having a refractive index lower than said substrate and having an optical
5	5	thick	ness of about one-quarter wavelength at a wavelength between 480 and 560 nanometers,
ϵ	5		said second layer having a refractive index higher than said substrate and having an optical
7	,	thick	ness between about one-quarter and one-third of a wavelength at a wavelength between 480
8	3	and 5	60 nanometers,
9)		said third layer having a refractive index lower than said second layer.
10			said fourth layer having a refractive index greater than said third layer.
. 11			said third and fourth lawers having a total optical thickness less than one-quarter wavelength
<u></u> 2		at a w	ravelength between 480 and 560 nanometers, and
			at least one of said second and fourth layers being said selected sputtered material.
	Company of the last	MANA TARA	A
ġ1 M	15	1/8.	The process of claim & wherein the step of sputtering is DC reactively sputtering.
M	^		187
4	19	79	The coating of claim wherein the tin oxide of said second laver is reactively sputtered and
12	5 _	the tin	oxide of said fourth layer is reactively sputtered.
	M		19,
1	20	7**	The coating of claim 19 wherein said tin oxide of said second layer is DC reactively
2		sputter	red and said tin oxide of said fourth layer is DC reactively sputtered.
	23		
1		2/1.	The coating of claim 10 wherein the tin oxide of said second layer is reactively sputtered and
2		the tin	oxide of said fourth layer is reactively sputtered.
-	24		<u></u>
1	~ 7	<i>F</i> -2.	The coating of claim 21 wherein the tin oxide of said second layer is DC reactively sputtered
2		and the	e tin oxide of said fourth layer is DC reactively sputtered.
•		22	
1		23.	The article of claim Kwherein said sputtered material is reactively sputtered.



- 1 25. The article of claim 3 wherein said sputtered material is reactively sputtered.
- 1 26. The article of claim 4 wherein said sputtered material is reactively sputtered.
- 1 27. The article of claim 5 wherein said sputtered material is reactively sputtered.
- 1 28. The article of claim 6 wherein said sputtered material is reactively sputtered.
- 1 29. The article of claim 7 wherein said sputtered material is reactively sputtered.
 - 30. The article of claim 8 wherein said sputtered material is reactively sputtered.

1 2 31. The coating of claim 9 wherein the tin oxide of said second layer is sputtered and the tin oxide of said fourth layer is sputtered.

25 32. The coating of claim 10 wherein the tin oxide of said second layer is sputtered and the tin oxide of said fourth layer is sputtered.

30806

add

C 7